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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,025	03/22/2005	Andreas Pachler	ZIP 3222	8882
7812 7590 01/28/2008 SMITH-HILL AND BEDELL, P.C. 16100 NW CORNELL ROAD, SUITE 220 BEAVERTON, OR 97006			EXAMINER GEBREMICHAEL, BRUK A	
			ART UNIT 3714	PAPER NUMBER
			MAIL DATE 01/28/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.		Applicant(s)	
	10/529,025		PACHLER, ANDREAS	
	Examiner		Art Unit	
	Bruk A. Gebremichael		3714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/31/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "preferably" in line 4 of claims 13 and 14, and the phrase "e.g." in line 4 of claim 14, render the claims indefinite, as it is not clear whether the limitations following these phrases are part of the claimed invention.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowers 6,154,353 in view of Fisher 2003/0176144 and further in view of Paden 2003/0001445.

Regarding claim 12, Bowers discloses the following claimed limitations, a globe sphere suspended contactless and magnetically (FIG 1, label O), whose position is maintained levitated via a permanent magnet mounted on said sphere (FIG 1, label 10), interacting with an electromagnet arranged in connection with a support above said sphere (col.1, lines 50-53), an electrical controller for said electromagnet and connected at its input end to a magnetic field sensor, particularly a Hall effect sensor (col.2, lines 27-34 and col.4, lines 42-44), and which controls the position of said globe sphere by energizing/deenergizing said electromagnet or by controlling the current flow through said electromagnet as a function of the output signals of said magnetic field sensor (col.2, lines 3-10), characterized in that a microcomputer is provided, receiving the output signal of said magnetic field sensor (FIG 2, label 20), and that said globe

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comprises a switching control means for influencing the duty cycle of said electromagnet and/or said current flow through, said voltage at, said electromagnet as a function of the time profile of each energized/deenergized status sensed by said microcontroller and/or said sensed current flow/voltage (col.2, lines 17-25 and FIG 3, *duty cycle plot*).

However, Bowers does not positively disclose, the globe comprising a globe support; and said microcontroller comprises at least one register/counter for sensing the energized/deenergized status and/or a device for sensing the current flow through, or the voltage at, said electromagnet over at least one defined time period.

Fisher discloses an invention for levitating objects that teaches, a globe comprising a globe support above the sphere (Para.0024).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the invention of Bowers in view of Fisher by incorporating a support structure for the sphere in order to float the sphere between the support arm of the structure and its base so that the sphere would mimic the orientation of the earth.

Bowers in view of Fisher does not positively teach, a microcontroller comprising at least one register/counter for sensing the energized/deenergized status and/or a device for sensing the current flow through, or the voltage at, said electromagnet over at least one defined time period.

Paden discloses an invention for positioning a movable body in a magnetic bearing system, that teaches a microcontroller comprising at least one register/counter

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for sensing the energized/deenergized status and/or a device for sensing the current flow through, or the voltage at, said electromagnet over at least one defined time period (Para.0035).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the invention of Bowers in view of Fisher and further in view of Paden by incorporating a processing unit or a computer that includes a memory in order to store sensor outputs so that these stored values would be used by the processor to stabilize the movable body in to equilibrium.

Regarding claim 13, Bowers in view of Fisher and further in view of Paden teaches the claimed limitations as discussed above. Bowers further discloses, said globe comprises a controlling and/or switching means with which the actual duty cycle of said electromagnet can be influenced in the direction of said reference value (col.5, lines 25-37).

Paden further discloses, microcomputer comprises at least one memory sensing each energized/deenergized status and a reference value memory for storing a reference duty cycle (Para.0035).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the invention of Bowers in view of Fisher and further in view of Paden by including a processing unit or a computer that includes a memory in order to store sensor outputs so that these stored values would be used by the processor to stabilize the movable body in to equilibrium.

However, Bowers in view of Fisher and further in view of Paden does not explicitly teach the sensing status being for a lengthy time period of at least 10 ms, preferably 500 ms to 5s.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to set a predetermined period since it has been held that where the general condition of a claim are disclosed in the prior art, discovering the optimum range or workable range involves only a routine skill in the art (See, *In re Aller*, 105, 105 USPQ 233).

Regarding claim 14, Bowers in view of Fisher and further in view of Paden teaches the claimed limitations as discussed above. Bowers further discloses, a comparison circuit or subtraction circuit is provided which senses the change in said duty cycle as compared to previous sensings (FIG 2, label 21), and that said globe comprises a controlling and/or switching means with which said actual duty cycle of said electromagnet can be influenced to boost/reduce said change (col5, lines 25-31).

Paden further teaches, memory/counter senses each energized/deenergized status over a period of time (Para.0035, lines 1-4 and Para.0039, lines 1-6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the invention of Bowers in view of Fisher and further in view of Paden by including a memory unit in order to store a plurality of displacement values of the object over a period of time so that these values would be used when estimating the sensor offset, as taught by Paden.

However, here also, Bowers in view of Fisher and further in view of Paden does not explicitly teach, the sensing status being over a shorter time period of e.g. 1 to 100 ms, preferably 5 to 50 ms.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to set a predetermined period since it has been held that where the general condition of a claim are disclosed in the prior art, discovering the optimum range or workable range involves only a routine skill in the art (See, *In re Aller*, 105, 105 USPQ 233).

Regarding claim 15, Bowers in view of Fisher and further in view of Paden teaches the claimed limitations as discussed above.

Paden further teaches, an analog/digital converter is provided for digitizing the output signal of said magnetic field sensor as the input signal for said microcomputer (Para.0035, lines 8-14).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the invention of Bowers in view of Fisher and further in view of Paden by incorporating a digital to analog converter in order to convert an analog signal into digital signal before sending it to the memory thereby facilitating inputs and outputs into the memory.

Regarding claims 16 and 17, Bowers in view of Fisher and further in view of Paden teaches the claimed limitations as discussed above.

Bowers further discloses, controller comprises a switch for deenergizing said electromagnet as soon as the output signal of said magnetic field sensor drops below a

predefined value, and for energizing said electromagnet as soon as the output signal of said magnetic field sensor exceeds a predefined value (Abstract, lines 9-18 and col.2, lines 17-25).

Claims 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowers 6,154,353 in view of Fisher 2003/0176144.

Regarding claim 18, Bowers discloses the following claimed limitations, a method of controlling the position of a globe sphere suspended (FIG 1, label O) making use of a permanent magnet in connection with said sphere (FIG 1, label 10) and interacting with an electromagnet arranged above said sphere (col.1, lines 50-53), comprising an electrical controller for said electromagnet (FIG 1, label 18) connected at its input end to a magnetic field sensor, particularly a Hall effect sensor, for detecting the spacing of said permanent magnet from said electromagnet (col.2, lines 27-34 and col.4, lines 42-44), and to control the position of said globe sphere by energizing/deenergizing said electromagnet or by controlling the current flow through said electromagnet as a function of the output signals of said magnetic field sensor (col.2, lines 11-16), characterized in that each energized/deenergized status of said electromagnet or the current flow through/ voltage at said electromagnet is sensed (col.5, lines 12-19) and that from the value of the duty cycle or current or voltage profile or change thereof a signal is derived for controlling and/or correcting activation of said electromagnet (col.5, lines 19-24).

However, Bowers does not positively disclose, the globe comprising a globe support.

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Fisher discloses an invention for levitating objects that teaches, a globe comprising a globe support above the sphere (Para.0024).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the invention of Bowers in view of Fisher by incorporating a support structure for the sphere in order to float the sphere between the support arm of the structure and its base so that the sphere would mimic the orientation of the earth.

Bowers in view of Fisher teaches the claimed limitations as discussed above. Bowers further discloses,

Regarding claim 19, said actual duty cycle is compared to a reference value for the wanted duty cycle of said electromagnet from which a signal is derived for controlling and/or correcting said electromagnet (col.5, lines 19-24).

Regarding claim 20, the changes in at least two sensings in sequence of said duty cycle are used for deriving a signal for controlling and/or correcting said electromagnet (col.5, lines 25-38).

Regarding claims 21 and 22, said electromagnet is deenergized as soon as the output signal of said magnetic field sensor falls below a first threshold value; and that said electromagnet is energized as soon as the output signal of said magnetic field sensor exceeds a threshold value (Abstract, lines 9-18 and col.2, lines 17-25).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruk A. Gebremichael whose telephone number is (571)270-3079. The examiner can normally be reached on Monday to Friday (7:30AM-5:00PM) ALT. Friday OFF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xuan Thai can be reached on (571) 272-7147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



B.G.
01/22/2008.



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